PRELIMINARY SURVEY OF PARASITES OF CLARIAS IN THE NIGER DELTA AREA OF NIGERIA

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ABSTRACT

A total of one hundred and sixty *Clarias lazera* were collected with line hood between April and June 1984 from the Niger Delta Area and observed for the presence of parasites. The results revealed the presence of three classes of endo-parasites - Trematodes (47%), Nematodes (46%) and Cestodes (7%).

It was found that, the parasites have great affinity for the Spleen (34%) and the Liver (28.3%). Also, smaller fish haboured more parasites than large fish.

Though the investigation is still continuing, the study reveals the presence of parasites in *Clarias* and calls for measures to prevent wide-spread infestation in fish ponds and suggests treatment of infested fish.

INTRODUCTION

African waters are rich in fishery resources and in spite of recent effort to increase catch, much of the potential supply fails to reach the great masses of the consumers. To combat this shortage of supply from capture fisheries, fish culture has a good prospect. One fish often considered for culture in Africa because of its wide distribution and hardy characteristics is the catfish - *Clarias* belonging to the family Clariidae (Elliot, 1976).

Much work has already been done on this group of fish including its parasitology (Khalil, 1961; 1972; Paperna and Thurston, 1968 Abolarin, 1971; Micha, 1972; Aderounmu and Adeniyi, 1972, Fischtal, 1972; Paperna, 1974; and Wakuke, 1980). However, little is known and recorded of the species of *Clarias* from the Niger Delta Area of Nigeria. This study was conducted to record the occurence of parasites and their site preferences in *Clarias* which hopefully would assist fish-farmers and consumers.

MATERIALS AND METHODS

About one hundred and sixty (160) of *Clarias lazera* (Cuv. et Val.) were collected with line hooks from four locations within the Niger Delta of Nigeria during the months of April to June 1984. These locations are all in the Rivers State, they are Agudama, Yenegoa Local Government Area (YELGA); Baalueku, Bori Local Government Area (BOLGA); Edagberi, Ahoada Local Government Area (ALGA); and Okpoma, Brass Local Government Area (BALGA).

As soon as the fish were collected, their general condition, location and date of collection and body length were noted. In addition, their external skin was examined with hand lens for for external parasites. They were taken to the laboratory in a bucket of water from their point of capture. In the laboratory, the fish were killed with Chloroform and the gill covers were cut open to expose the gills for examination. Then, the clinically dead fish was dissected and the different internal organs - stomach, intestine, spleen, liver, gills and gall bladder were examined separately for parasites and recorded. Parasites were identified from taxonomic key and description of Hoffman (1967) and Robert (1978).

RESULTS AND DISCUSSION

All fish for the study measured between 10.3 cm to 17.00 cm. No ectoparasites were observed on any of the fish, but when dissected, most fish showed yellowish patches on their gills and a somewhat rhythmic movement of the stomach, which indicates the presence of endoparasites. Summary of the results are shown in Tables 1, 2 and 3.

A detailed look at the results revealed a total of about three classes of endoparasites totaling 802 individuals. These classes are the Trematodes (47%). Nematodes (46%) and Cestodes (7%). Within each class one species often predominates all others, for instance, *Acetodoxtra* spp 69.5% (Trematodes), *Capillaria* spp 84.9% (Nematodes), and Monobathrium spp 89.3% (Cestodes) (Table 1).

Data concerning attachment sites of the parasites on each shows a great affinity for the spleen (30.42%), liver (28.28%), intstine (17.71%), stomach (14.71%), gills (8.73%) and gall bladder (0.25%) (Table 2). The high incidence of parasites on the spleen is understandable, since the function of red blood cells destruction is ascribed to the spleen (Bond, 1979). The spleen hence, acts as a reservoir for destroyed erythrocytes and the center for the formation of lymphocysts antiboides and antitoxins. It is from the spleen that any resistant parasite could pass to the liver. The difference in infestation between the stomach and intestine could be in part attributed to the high acidity of the stomach whereby only the most resistant parasites can occur comfortably.

Furthermore, the study revealed that smaller fish (50% of the total sample, those less than 15.0 cm), habour more parasites than larger fish. The difference could be due to the high immunity response of larger fish. Also, this higher incidence of infestation of smaller fish could be attributed to the more benthic mode of feeding of the smaller fish. Whereas larger fish occasionally supplement benthic mode of feeding with carnibalism, thereby reducing the incidence of parasites in the partially decaying organic matter on the bottom.

The incidence of infestation appeared to be fairly uniform among the locations sampled. However, fish from Baalueku (BOLGA 33% and Agudama (YELGA) 27% had slightly higher incidence of infestation. All the genera of parasites were encountered from fish of these areas. Whereas only five species of parasites were found in Okpoma-Brass (BALGA) 21% and Edagberi (ALGA) 19% (Table 3). This lower incidence of parasites does not necessarily indicate a healthier fish or environment but, in part, could be as a result of the acidic charcterisitcs of the water and the swamps in these areas. For instance, Okpoma-Brass is in the saline swamps of the Niger Delta with a very high content of decaying and/or partially decomposing organic matters, hence should have high occurrence of parasites. Yet, the acidic condition may have reduced the number of parasites inhabiting these swamps.

Even though, the results presented here are preliminary, one could say with some degree of confidence that the occurrence and intesnity of infestation appear to be high. Therefore, if *Clarias* species are to be encouraged as pond fish, strategies for controlling the parasites and treating the infested fish should always be included in such development plans.

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TABLE 1A – PARASITES OBSERVED WITH % IN EACH CLASS

Trematodes	*No. of individuals*	*%*	*Nematodes*	*No. of individuals*	*%*	*Cestodes*	*No. of individuals*	*%*
Acetodextra	360	69.51	Capillaria	316	84.95	Monobathrium	50	89.29
Clinostomium	70	18.71	Metabroneium	32	8.60	Diphyllobathrium	2	3.57
Allocreadium	34	9.09	Spiroxys	18	4.84	Phyllobothrium	2	3.57
Centrovarium	10	2.67	Centrocoecium	6	1.61	Protocephalus	2	3.57
Total	**374**		**Total**	**372**		**Total**	**56**	
Percentage (%)	**46.63 47**		%	**46.38 46**		%	**6.983 7**	

No. of individuals %

TABLE 2 – ORGANS OBSERVED WITH THE CORRESPONDING PARASITE BURDEN AND % INFESTATION

Organ where found / *Parasite species identified*	*Capillaria sp.*	*Acetodextra sp*	*Clinostomium sp.*	*Monobothrium sp.*	*Allocreadium sp.*	*Metabronenium sp*	*Spiroxys sp.*	*Centrovarium sp.*	*Contracaeium sp.*	*Diphythrobothrium sp.*	*Phyllobathrium sp.*	*Protocephalus sp.*	*Total*	*(%) Percentage*
Spleen	50	144	–	–	–	32	18	–	–	–	–	–	244	30.42
Liver	104	166	–	–	–	–	–	–	6	–	–	–	266	28.18
Intestine	106	–	–	6	26	–	–	–	–	2	–	2	142	17.71
Stomach	54	–	–	44	8	–	–	10	–	–	2	–	118	14.71
Gills	–	–	70	–	–	–	–	–	–	–	–	–	70	8.73
Gall bladder	2	–	–	–	–	–	–	–	–	–	–	–	2	0.25
Total	**316**	**260**	**70**	**50**	**34**	**32**	**18**	**10**	**6**	**2**	**2**	**2**		
%	**39.4**	**32.42**	**8.73**	**6.23**	**4.24**	**3.99**	**2.24**	**1.25**	**0.75**	**0.25**	**0.25**	**0.25**		

TABLE 3 – LOCATIONS WITH THEIR CORRESPONDING PARASITE BURDEN

Location / Collection / Parasites	*Capillaria sp.*	*Acetodextra sp.*	*Clinostomium sp.*	*Monobothrium sp.*	*Allocreadium sp.*	*Metabronemium sp.*	*Spiroxys sp.*	*Centrovarium sp.*	*Contracaeium sp.*	*Diphythrobothrium sp.*	*Phyllobathrium sp.*	*Protocephalus sp.*	*Total*	*(%) Percentage*
Baalueku (BOLGA)	98	82	12	12	7	13	10	7	4	1	–	–	246	32.64
Agudama (YELGA)	56	76	22	10	6	19	8	3	2	1	2	2	207	27.15
Okpoma–Brass (BALGA)	98	48	14	13	10	–	–	–	–	–	–	–	183	21.04
Edagberi (ALGA)	64	54	22	15	11	–	–	–	–	–	–	–	166	19.10
Total	**316**	**260**	**70**	**50**	**34**	**32**	**18**	**10**	**6**	**2**	**2**	**2**	**802**	
Percentage (%)	**39.4**	**32.42**	**8.73**	**6.23**	**4.24**	**3.99**	**2.24**	**1.25**	**0.75**	**0.25**	**0.25**	**0.25**		

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